

ENVIRONMENTAL MARKETS AND BEYOND: THREE MODEST PROPOSALS FOR THE FUTURE OF ENVIRONMENTAL LAW

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I. BEYOND THE MISGUIDED QUEST FOR IDEAL INSTITUTIONS

Legend has it that the great architect Frank Lloyd Wright was once asked what he would do if he was appointed city planner for New York City. "Blow it up, move fifty miles up the Hudson, and start again," he supposedly harrumphed.

The line is usually good for a chuckle, precisely because we all understand that life really doesn't work that way. Most of the time, we have to work with the raw materials that previous generations have bequeathed us, and we are only able to make modest changes that build on what has gone before. Only in fantasy do we get the chance to blow it all up, move fifty miles up the Hudson, and start all over again.

In that spirit, I offer three modest proposals for what we might do to improve environmental law in the United States in the next generation.¹ They are: (1) increased use of environmental markets ("cap and trade" or bubble programs) and other incentive-based regulatory instruments; (2) retroactive application of the *Chevron*² decision, which would help to clear out some of the policy underbrush left by overly aggressive past court decisions; and (3) increased use of information production and

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¹ After this article was largely written, I discovered that I was in good company in making these suggestions. Two out of my three suggestions—increased reliance on incentive-based regulation and on information disclosure—are also on future agenda of leading environmental economist and Resources for the Future President Paul Portney. Paul R. Portney, *Environmental Problems and Policy: 2000-2050*, *RESOURCES* 6, 6-7 (No. 138, Winter 2000). I agree with most of Portney's other predictions, including that: "*The principal environmental challenge for the developed world today is helping the developing countries to increase their standards of living in ways that help them skirt, to as great an extent as possible, the pollution-intensive period the developed countries underwent.*" *Id.* at 9.

² *Chevron U.S.A., Inc. v. Natural Res. Def. Council*, 467 U.S. 837 (1984) (giving administrative agencies greater discretion to construe statutes).

dissemination as a strategy to stimulate so-called "voluntary"³ actions to protect the environment.

While I am a strong supporter of expanding the use of environmental markets, trading and other incentive-based systems, and also of information creation and disclosure programs, I recognize that even these are *not* the Holy Grail of environmental institutions. There are no perfect institutions. For every strategy, there are limitations, and these limitations can become the basis for exploitative counterstrategies.⁴ For this reason, legal techniques tend to wear out over time as participants figure out strategic behaviors to "game the system."

The debate that still rages in some quarters about whether environmental markets are better than command-and-control regulation strikes me as about as nonsensical as a debate about whether airplanes or trucks are a better method of transportation. Obviously, each has its inherent strengths and weaknesses. Therefore, each has its role, or "ecological niche," and a composite system comprised of both is likely to be more adaptable than a "pure" system composed of either one alone. For the same essential reasons, I have long been an advocate of "hybrid systems" of environmental regulation in which market-based and "voluntary" approaches supplement but do not supplant traditional command-and-control standard-setting.⁵ A healthy legal system is like a healthy ecosystem,⁶ and nature abhors uniformity and thrives on diversity. Dangers are created when any species becomes too dominant and crowds out its competitors. Information, "voluntary" actions, environmental

³ I dislike the term "voluntary," which I believe obscures the true nature of actions taken in response to incentives other than legal compulsion. E. Donald Elliott, *Environmental TQM: Anatomy of a Pollution Control Program that Works!*, 92 MICH. L. REV. 1840, 1849-52 (1994) (review of QUALITY ENVTL. MGMT. SUBCOMMITTEE, PRESIDENT'S COMM'N ON ENVTL. QUALITY, TOTAL QUALITY MANAGEMENT: A FRAMEWORK FOR POLLUTION PREVENTION (1993)).

⁴ This essential point can be shown formally as a matter of game theory in terms of whether a particular game has a "dominant" strategy. Intuitively, it was captured in the (in)famous series *Spy vs. Spy* in MAD MAGAZINE. For every creative scheme devised by the Black Spy, the White Spy invented an effective counter-strategy and vice versa.

⁵ See, e.g., E. Donald Elliott, *Foreword: A New Style of Ecological Thinking in Environmental Law*, 26 WAKE FOREST L. REV. 1 (1991) [hereinafter Elliott, *New Style*]; E. Donald Elliott, *Environmental Law at a Crossroad*, 20 N. KY. L. REV. 1 (1992) (Siebenthal lecture); Elliott, *supra* note 3; E. Donald Elliott, *Toward Ecological Law and Policy*, in THINKING ECOLOGICALLY 170 (Marian R. Chertow & Daniel C. Esty eds., 1997); E. Donald Elliott & Gail Charnley, *Toward Bigger Bubbles: Why Interpollutant and Interrisk Trading Are Good Ideas and How We Get There From Here*, 13 F. FOR APPLIED RES. & PUB. POL'Y 48, 48-54 (Winter 1998) [hereinafter Elliott & Charnley].

⁶ Elliott, *New Style*, *supra* note 5, at 7.

markets and command-and-control standard setting all have important roles to play in an overall portfolio of environmental institutions.

The proper question for aspiring environmental policymakers is not whether environmental markets or information disclosure work "better" than command-and-control standard setting. The answer to that question is as obvious as it is trivial: sometimes they do and sometimes they don't. Rather, the important question is how to define the proper domain of each of these techniques based upon its characteristic strengths and weaknesses. This is the inverse of then-professor Stephen Breyer's famous theory of "regulatory mismatch," the idea that some regulatory problems occur because we use techniques that are ill-adapted to the structure of a particular problem.⁷

In the second section, I will elaborate on several features of environmental markets that make them attractive in certain circumstances. Many of these advantages are familiar, such as the potential for markets to reduce costs as compared to uniform standards set by government. Other advantages of market-based approaches are less familiar but equally important, such as the potential for market-based approaches to economize on the resources required to regulate in some circumstances.⁸ One statistic illustrates how important and pronounced this advantage can be: there are about 15,000 government employees working on air pollution control in the United States, of whom only about fifty (0.3% of the total) work in the acid rain program at EPA, yet this single market-based program has produced a substantial portion of the reductions in air pollution over the last decade.⁹ Elsewhere I have called this the "leverage" factor: the ratio between direct government expenditures and the resources that they are able to leverage in the private sector. Implementing legal controls to manage the environment is a task of stunning complexity that continually challenges and expands the limits of legal techniques. One of the reasons that EPA has had qualified success in achieving some environmental progress¹⁰ is that EPA typically uses high leverage techniques, such as informal rulemaking, rather than case-by-case adjudication. Incentive-based systems are a new state-of-the-art in high leverage techniques, by which government can manage complex systems at far less direct expenditure of its own resources.

⁷ STEPHEN BREYER, *REGULATION AND ITS REFORM* 191 (1982).

⁸ Elliott & Charnley, *supra* note 5.

⁹ See U.S. EPA, *PROGRESS REPORT ON THE EPA ACID RAIN PROGRAM*, EPA 430-R-99-011, 6 (1999).

¹⁰ Steven A. Cohen, *EPA: A Qualified Success, in* *CONTROVERSIES IN ENVIRONMENTAL POLICY* 174-91 (Sheldon Kamieniecki et al. eds., 1986).

A good example is EPA's recent twenty-three state nitrogen oxide (NO_x) state implementation plan (SIP) call.¹¹ EPA found it much easier to set up a model rule for a tradeable market in NO_x allowances with a far lower expenditure of the government's resources than what would have been required to amend each states' SIP for each individual source on a case-by-case basis. Of course, this NO_x market built upon techniques and technologies developed previously for other programs, but the example illustrates the point that in some circumstances, markets can be far more efficient for *government* regulators than old-fashioned case-by-case command-and-control regulation.

Enhanced efficiency for *government* is an important but under-appreciated advantage of market-based systems. In my view, the chemical-by-chemical, source-by-source system of environmental protection through legalistic regulation in the United States is "an inch wide and a mile deep:" historically, we regulate too few problems but we regulate the few that we do deal with more stringently than we probably should. This misallocation of resources often results because of the very high information processing costs that are a precondition for government standard-setting using traditional command-and-control techniques under the American system of legality and administrative law. The rising tide of calls from Europe and environmentalists for greater use of the "precautionary principle" should be seen as a protest against the high transaction costs of the American system of legalistic regulation. It would be a great boon to more effective protection of the environment in the United States if we could achieve higher leverage ratios like those of the acid rain trading program. The higher leverage ratios of incentive-based systems in managing complex problems are why a serious discussion of large-scale future programs such as global climate or maintaining biological diversity must include the potential use of market-based tools.

Unfortunately, however, not every environmental problem is amenable to a market-based solution, at least not in the short run. In the second section, I also discuss some of the preconditions required for markets to function, such as the availability of technologies to delimit and enforce property rights.

In the third section, I suggest that the *Chevron* decision should be applied retroactively, in the sense that agencies should "non-acquiesce" in past court decisions in which courts were overly aggressive in interpreting environmental statutes in a manner that would not pass muster if the case

¹¹ 63 Fed. Reg. 56,292 (proposed Oct. 21, 1998) (to be codified at 40 C.F.R. pts. 52 and 97); 64 Fed. Reg. 28,250 (final rule May 25, 1999) (to be codified at 40 C.F.R. pt. 52); 65 Fed. Reg. 2,674 (amended final Jan. 18, 2000) (to be codified at 40 C.F.R. pts. 52 and 97). This regulation dealt with the affected states' implementation plans for nitrogen oxides.

had been decided by the Supreme Court. Many of the distortions in our environmental laws that bedevil policy-making today, such as the inability of EPA to consider costs and benefits in setting standards under the Clean Air Act, do not in fact result from past decisions by Congress (although this loose claim is often asserted imprecisely). Rather, these bad decisions that distort policymaking often are the accumulated baggage that has built up over time from past court decisions that purported to "interpret" "congressional intent" based on either ambiguous statements in legislative history or the court's view of Congress's "purpose." Such decisions would clearly not pass muster under the current paradigm for courts to defer to reasonable administrative constructions of statutes except when Congress has made a conscious policy decision on the issue.¹² However, these past decisions, even though erroneous under today's standards, rule us from the grave. I believe that agencies should consider themselves not to be bound by past court precedents that are clearly invalid under today's standards for interpreting statutes. Let us call this "intertemporal non-acquiescence." The policy considerations are similar to the more familiar problem of geographic non-acquiescence. The government refuses to follow the decisions of one court of appeals outside the geographic boundaries of the circuit so that the issue may be decided by other circuits and perhaps eventually corrected by the Supreme Court. By parity of reasoning, agencies have a responsibility to the integrity of the legal system as a whole to refuse to go along with past court decisions if they conclude that those decisions are probably incorrect if evaluated by the post-*Chevron* standards for the proper roles of courts and agencies.

In the fourth section, I consider how information production and disclosure programs sometimes work to produce dramatic gains for the environment, and explore why we have nonetheless under-invested in these programs. I conclude that the problem is with the theories of human nature that underlie our shared account of environmental problems. Underlying every theory of law, implicitly or explicitly, is a theory of human nature. In designing laws, we implicitly reflect our conception of what motivates human beings and how a system of legal incentives can re-shape human behavior.¹³ In the case of environmentalism, however, our shared theory

¹² For a good summary of the *Chevron* decision and its implications for changing the relationships between agencies and reviewing courts, see Kenneth W. Starr, *Judicial Review in the Post-Chevron Era*, 3 YALE J. ON REG. 283 (1986). See also Cass R. Sunstein, *Law and Administration After Chevron*, 90 COLUM. L. REV. 2071 (1990); Peter H. Schuck & E. Donald Elliott, *To the Chevron Station: An Empirical Study of Federal Administrative Law*, 1990 DUKE L.J. 984 (1991).

¹³ See E. Donald Elliott, *Law and Biology: The New Synthesis?*, 41 ST. LOUIS U. L.J. 595 (1997) [hereinafter Elliott, *Law and Biology*]; E. Donald Elliott, *Contributions of Ethology and Evolutionary Biology to Modifying the Model of Human Nature in U.S. Law*, (continued)

of human nature has been drawn largely from the economic model of human nature, which I shall call *homo oeconomicus*. This narrow view of human nature as selfish and unenlightened is exemplified in Garrett Hardin's famous parable, *The Tragedy of the Commons*.¹⁴ Hardin imagines a world in which grazing land is held in common, and asserts that each individual cattle herder will supposedly place additional cows onto the commons until its carrying capacity is exceeded and they all starve.¹⁵ This results, according to Hardin, because each individual is only concerned about the potential for selfish gain from the additional cow and pays no attention to the potential disaster looming for the community as a whole.¹⁶

Despite its great influence on modern American environmentalism, in actuality Hardin's model is too simplistic in portraying human nature as unalloyed in its short-sightedness and selfishness.¹⁷ Human beings do indeed suffer from the failings that Hardin identified to some degree, and environmental disaster can result. But there are also numerous success stories in human history in which human communities anticipated the problems of environmental degradation and took effective action to prevent disaster.¹⁸ Because the economic model of human action enshrined in *Tragedy of the Commons* overlooks these potential positive sides to the human spirit, we have overlooked and undervalued the extent to which collective foresight, information production and dissemination, education and developing cultural values are also powerful tools that can be used along with legal orders and economic incentives for protecting the environment.

Interdisziplinäres Kolloquium zur Schwerpunkt "Recht und Verhalten" der Volkswagen-Stiftung, Beiträge der Sozial- und Verhaltenswissenschaft zur Mechanik des Rechts (contribution to volume of papers presented at Volkswagen Foundation Interdisciplinary Conference on contributions of behavioral science to the model of human nature in law) (Forthcoming 2000) (on file with author and Capital University Law Review) [hereinafter Elliott, *Contributions*].

¹⁴ Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968).

¹⁵ *Id.* at 1244.

¹⁶ *Id.*

¹⁷ See also William H. Rodgers, Jr., *Bringing People Back: Toward a Comprehensive Theory of Taking in Natural Resources Law*, 10 ECOLOGY L.Q. 205 (1982) (criticizing economic model of human motivations as too narrow).

¹⁸ Conrad Totman, *The Forests of Tokugawa Japan*, 18 TRANS. ASIATIC SOC. JAPAN 3d 1 (Tokyo, 1983); Conrad Totman, *THE GREEN ARCHAPELIGO: FORESTRY IN PRE-INDUSTRIAL JAPAN 189-90* (1989). Other examples of both successes and failures are collected in JARED DIAMOND, *THE THIRD CHIMPANZEE: THE EVOLUTION AND FUTURE OF THE HUMAN ANIMAL* 317-38 (1992).

These "softer" programs work in practice; now the challenge is also to make them work in theory. Experience with programs such as NEPA,¹⁹ TRI²⁰ and the 33/50 program²¹ have all demonstrated that mandatory advantage identification and assessment of looming environmental problems and information disclosure can be powerful tools in the environmental area. Similar requirements for information production and dissemination are mainstays of the legal approach to regulation in many other areas of law, such as regulating securities markets, but at least until recently we have tended to undervalue their effectiveness in protecting the environment. So-called "voluntary" information disclosure programs can make an important contribution to an overall or portfolio strategy for environmental improvement. Again, they should not replace but supplement command-and-control standard setting by government. Although they are an important part of an overall approach, they have been systematically under valued because our models of human nature and motivations are too narrow.

II. INCREASED USE OF ENVIRONMENTAL MARKETS AND INCENTIVES

There is already a substantial and growing academic literature on the virtues of environmental markets, as well as a very successful large-scale pilot program—the acid rain trading program under Title IV of the 1990 Clean Air Act Amendments.²² As someone who served as General Counsel of EPA during the years that the acid rain trading program was designed and initially implemented, I do not minimize the importance or difficulty of expanding on that model and extending it to other situations. In my opinion, this is probably the most important task domestically in the years immediately ahead.

Many different reform proposals, such as the "Alternative Compliance Systems" proposed in the Second Generation Environmental Improvement Act²³ are tantamount to constrained market trading systems, albeit clothed in different rhetoric. It is not yet generally understood that alternative compliance is also a kind of "bubble" or "cap and trade" system that utilizes the "logic of the bubble"²⁴ to achieve greater efficiency. Under an

¹⁹ National Environmental Policy Act, Pub. L. No. 91-190, 83 Stat. 852 (1970).

²⁰ Toxics Release Inventory, 42 U.S.C. § 11,023 (1998).

²¹ Pollution Prevention Strategy, 56 Fed. Reg. 7849 (1991).

²² Pub. L. No. 101-549, 104 Stat. 2399 (codified as amended in scattered sections of 42 U.S.C.). See also Portney, *supra* note 1; Robert W. Hahn & Robert N. Stavins, *Incentive-Based Environmental Regulation: A New Era from an Old Idea?*, 18 *ECOLOGY L.Q.* 1 (1991). There are also notable failures. For example, so far EPA has been unable to adapt market-based trading systems to control non-point sources of water pollution.

²³ H.R. 3448, 106th Cong. (1999).

²⁴ Elliott & Charnley, *supra* note 5.

alternative compliance system (or any "performance standard" for that matter), the "cap" is the existing level of control set by command-and-control regulation, and the only "trades" that are permitted are internal ones—substituting one method of performance for another. A "performance standard" for a single source is a very small bubble that constrains trading in many ways, so the potential for efficiency gains are limited. On the other hand, it is possible to conceive of the acid rain trading program as a "bigger bubble" over the entire electric utility industry for a single pollutant over ten years. Broadening out even more, it is possible to imagine a still "bigger bubble" by substituting one kind of environmental risk reduction for another (with all of the measurement problems that doing so would entail).²⁵

All of these programs with different names build on the essential "logic of the bubble"—the idea of trading regulatory burdens to the entity that can bear them most efficiently. This concept was first described in print by Ronald Coase in 1960,²⁶ applied at EPA in the late 1970s and upheld by the Supreme Court in the *Chevron* case in 1984.²⁷ One of the primary tasks of the next generation, in my view, is assimilating and applying the "logic of the bubble" in its many different guises.

Some of the advantages of environmental markets are well understood in the literature. Where there is a diversity of sources and the possibility of over-control, environmental markets or trading systems may use what I call the "logic of the bubble" to achieve equivalent or better protection of the environment at a fraction of the cost of conventional command-and-control systems. In addition, bubbles create dynamic incentives for the development of innovation and improved technologies. These are some of the primary features of bubbles that have received attention in the literature to date. Several of the other advantages of environmental markets are not as well understood in the literature, however. In proper cases, an additional advantage of environmental trading systems is that they can economize on the governments' own information processing costs. Thus, market-based approaches can enable government to regulate many of the "second generation" environmental problems. These second generation problems consist of a diversity of small sources that are very difficult to regulate through traditional command-and-control standard setting because of the high information processing costs that our system of legality and administrative law sets as a precondition for government regulation.²⁸

²⁵ See *id.*

²⁶ Ronald H. Coase, *The Problem of Social Cost*, 3 J. L. & ECON. 1 (1960).

²⁷ 467 U.S. at 866.

²⁸ Francis S. Blake, *The Economic Impacts of Environmental Regulation*, 5 NAT. RES. & ENV'T 23 (1990). See also Daniel C. Esty & Marion R. Chertow, *Thinking Ecologically: An Introduction*, in THINKING ECOLOGICALLY, *supra* note 5. For a tongue-in-
(continued)

This additional important advantage of markets is only now beginning to be grasped in the literature. Markets economize on the government's own costs in regulating. A lack in ability of the government to acquire and process information is often the key factor limiting the progress of environmental regulation. Underlying the swelling support for the "precautionary principle" in Europe is a protest against the high information costs imbedded in the culture of regulation by the legalistic bureaucracy in the United States. Our system of legality and administrative law requires building a huge "record" that will withstand judicial review as a precondition to government regulation. These high transaction costs for *government* caused by the current style of regulation by bureaucratic standard setting in the United States result in a system of environmental regulation that is "an inch wide and a mile deep"—a system that regulates both too little and too much at the same time. Thus, we should condemn the overuse of inefficient command-and-control systems in the United States not just because they waste industry's money, but also because their inefficiency and high demand for information processing by government as a precondition for environmental improvements results in *under regulation* by leaving large segments outside the regulatory umbrella. The intuitive appeal of the "precautionary principle" is the simple notion that there must be a better way; we cannot hold the populace hostage while lawyers and bureaucrats argue about the scientific evidence.

Often, the "better way" is to establish a market in tradeable rights. Markets do not require extensive information processing by government to "fine tune" the right answer. Such delays are frustrating to the advocates of the "precautionary principle," who are anxious to get on with the (to them) obvious work of regulating what needs to be regulated. Setting up a market in tradeable rights often requires far *less* expenditure of resources by the government than regulating by bureaucratic command and control. This is the underlying insight behind Dick Stewart's analogy between "command-and-control" environmental regulation and "Soviet-style central planning."²⁹

Markets work. At least sometimes. They do not emerge by magic, but presume certain underlying foundational technologies as prior developments, such as accurate means to measure and to enforce property rights. On the other hand, there are certain necessary preconditions for effective environmental trading. These are well understood in the theoretical literature that discusses property rights, but the preconditions

cheek parody of the problems that information acquisition and processing poses for command-and-control regulation by a former EPA Administrator, see Douglas M. Costle, *Brave New Chemical: The Future Regulatory History of Phlogisten*, 33 ADMIN. L. REV. 195 (1981).

²⁹ Richard B. Stewart, *Economics, Environment, and the Limits of Legal Control*, 9 HARV. ENVTL. L. REV. 1 (1985).

are not always familiar to environmental policymakers. In the same way that surveying and fences made possible the movement to enclose common lands in England, the development of continuous emission monitors and a regulatory structure to enforce tradeable rights in air made the acid rain trading system possible. Two of the primary preconditions for an environmental market are (1) an effective technology for measuring and delimiting the rights to be traded, and (2) an effective legal system for enforcing the property rights.³⁰ The challenge in creating an environmental market is often to design the predecessor regulatory system that will create proper incentives to produce the technological developments that are preconditions for a transition to a market.

III. APPLYING CHEVRON RETROACTIVELY

The Supreme Court's decision in *NRDC v. Chevron*³¹ is one of the most important administrative law decisions of this era. While commentators still debate whether *Chevron* implicitly had constitutional underpinnings or was merely a default rule for interpreting congressional intent, there is little doubt that the decision effectively changed the balance of power between courts and agencies.³² The fundamental effect of *Chevron* was to alter the prevailing understanding of what it means for a statute to "have" a meaning and for Congress to have an "intent." Before *Chevron*, the prevailing legal fiction was that statutes inherently "had" a "meaning" for every conceivable legal issue that might arise, and that it was the office of the courts, particularly the courts of appeal, to discern these imminent but pre-existing "meanings" by deducing them from ambiguous stimuli such as legislative history. *Chevron* did away with the fiction that a statute "had" a single correct "meaning" on every issue. It substituted instead the idea that unless Congress had focused on an issue and made a conscious policy decision, there was an implied delegation to the agency to adopt any "reasonable" interpretation of the statute.³³ In place of the fiction of a single, ascertainable congressional "intention," *Chevron* substitutes the fiction—or default assumption—of an implied delegation.³⁴

There are strong policy reasons to favor the shift in the power of construing ambiguous statutes from lower courts to agencies. The involvement of courts with most statutes is episodic and their

³⁰ See generally Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347 (1967).

³¹ 467 U.S. 837.

³² Linda R. Cohen & Matthew L. Spitzer, *Solving the Chevron Puzzle*, 57 LAW & CONTEMP. PROBS. 67 (1994).

³³ 467 U.S. at 865–66.

³⁴ *Id.*

understanding of the policy implications of their decisions is fragmentary. A court is likely to reach a result that is unsound from a policy perspective because of "designer" legislative history procured by special interests,³⁵ or what the court may mistakenly view as good policy through the distorted lens of a single case. For all their flaws, agencies, which are entrusted with administering the statute and making it work over the long haul, generally reach better results where statutes are ambiguous.

Therefore, I favor applying the *Chevron* principle of deferring to reasonable agency construction of ambiguous statutes not only prospectively, but also retroactively. In other words, I believe that agencies should no longer consider themselves bound by past court "precedents" that were decided before *Chevron* in which lower courts imposed more aggressive interpretations than would be sustainable under the modern *Chevron* rule.

There are numerous examples of the "dead hand" of past bad court decisions that still rule us from the grave in the environmental area. Two important examples under the Clean Air Act³⁶ are *Lead Industries Assn. v. EPA*,³⁷ and *Alabama Power Co. v. Castle*.³⁸ In *Lead Industries*, the D.C. Circuit relied principally on a floor statement by Senator Muskie, the principal sponsor of the 1970 Clean Air Act, to impose the fundamental principle of clean air law that economic costs may not be considered in setting National Ambient Air Quality Standards.³⁹ This decision was almost certainly wrong under the modern view that floor statements by single legislators, even sponsors, are not in and of themselves binding.⁴⁰ Yet the "principle" that EPA may not consider costs in setting standards still distorts and bedevils standard setting under the Clean Air Act.⁴¹

This issue is now before the Supreme Court in the *American Trucking* case. In *Alabama Power*, the D.C. Circuit overturned a variety of EPA interpretations of the Prevention of Significant Deterioration program, permanently warping and distorting that program in many ways.

35 See, e.g., BRUCE A. ACKERMAN & WILLIAM T. HASSLER, *CLEAN COAL/DIRTY AIR* (1981).

36 42 U.S.C. §§ 7401-7671q (1994).

37 647 F.2d 1130 (D.C. Cir. 1980).

38 636 F.2d 323 (D.C. Cir. 1980).

39 647 F.2d at 1152-53.

40 *Brock v. Pierce County*, 476 U.S. 253, 263 (1986) (floor statements considered, but not controlling).

41 See *Am. Trucking Ass'ns, Inc. v. EPA*, 175 F.3d 1027 (D.C. Cir. 1999) cert. Granted, *Browner v. Am. Trucking Ass'ns*, 120 S.Ct. 2003 (2000). See also Cass R. Sunstein, *Is the Clean Air Act Unconstitutional?*, 98 MICH. L. REV. 303 (favoring considering costs in setting National Ambient Air Quality Standards).

My view is that where past court decisions clearly went beyond the proper limits of statutory construction, as explicated by the Supreme Court in *Chevron*, or gave binding weight to scraps of legislative history in ways that are now seen as improper under subsequent Supreme Court decisions,⁴² agencies should no longer consider themselves bound by these past precedents. Instead, if the statute is truly ambiguous (as when Congress has not made a conscious policy decision under *Chevron I*), agencies should consider themselves free to re-visit the policy issues under *Chevron II*, despite prior court decisions. This situation is analogous to other situations in which an intervening Supreme Court decision casts doubt on the continued validity of prior precedent.

My former Dean at Yale, now Circuit Judge Calabresi, has written persuasively about the problems of "statutorification," the tendency of statutes to become encrusted and rigid as interpretations accumulate.⁴³ This is particularly true where courts have imposed mandatory interpretations on an unwilling agency responsible for administering the statute. After all, as a matter of basic administrative law, an agency choosing a permissive interpretation under *Chevron II* is free to change its views in the light of subsequent experience.⁴⁴ Not so with interpretations imposed by courts on agencies before *Chevron*. However, if the agency continues to acquiesce and follow past court precedents, the issue is much less likely to come back to the courts for more definitive re-examination. This of course is the basic rationale justifying "non-acquiescence" by the government in courts of appeals' decisions that it considers erroneous in other areas.⁴⁵

There are obviously countervailing considerations that militate in favor of following past precedents, which are generally grouped together under the term *stare decisis*. The stability and integrity of law is undermined if agencies are too free to declare themselves freed from strictures imposed by past court decisions. However, my current view is that we could do more good than harm if agencies were to recognize a limited power to provoke reconsideration of past errors made by courts through overly-aggressive interpretations of statutes that would not be permitted today under *Chevron*. I say "my current view" advisedly, because ten years ago,

42 See, e.g., *Brock v. Pierce County*, 476 U.S. 253 (1986).

43 GUIDO CALABRESI, *A COMMON LAW FOR THE AGE OF STATUTES* (1982).

44 See, e.g., *NLRB v. Hearst Publications, Inc.*, 322 U.S. 111 (1944). See also *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto Ins. Co.*, 463 U.S. 29 (1983).

45 For a general explanation of the policies behind the non-acquiescence doctrine, see *United States v. Mendoza*, 464 U.S. 154 (1984) (nonmutual offensive collateral estoppel does not apply against the United States because it "would substantially thwart the development of important questions of law by freezing the first final decision rendered on a particular legal issue"). *Id.* at 160.

when I was EPA General Counsel and might actually have been able to do something about this, my view was otherwise. Some thoughtful members of my senior staff approached me and proposed exactly what I am now advocating; that we at EPA should declare ourselves no longer bound by overly aggressive past court decisions such as *Alabama Power*. I had no stomach for it. My reasoning was obvious; too many expectations had been built up around past decisions to change them now, even if they were erroneous under the new paradigm for defining relationships between courts and agencies. In many cases, Congress had re-enacted the statute in the meantime. Perhaps I also felt that we had enough to do by fighting contemporary political battles instead of re-opening old ones.

Now, from the luxury of the sidelines, it appears to me that I was wrong in the view that I adopted when in the arena. Congressional re-enactment really should not count for much. As a practical matter in Congress, there is a large difference between overturning a court decision by majority in both houses and just not making a conscious policy decision on the matter. One requires an aroused majority; the other mere inaction (or negative majorities, as when no policy option could capture a majority). The basic teaching of *Chevron* is that if a majority of both houses of Congress does not care enough to mandate an outcome, we ought to let the agency decide, provided of course that its policy decision is reasonably consistent with the statute. Leaving aside for a moment whether the reallocation of power from judges to the executive branch was legitimate as a matter of constitutional law,⁴⁶ in my view, the *Chevron* principle is a sound norm that results in decisions that are better as a matter of policy. *Chevron* ought to apply to past abuses by lower courts that imposed their own will on the law in the guise of interpreting congressional intent as well as to the abuses that occurred after the Supreme Court saw the light in 1984.

IV. HOW INFORMATION PROTECTS THE ENVIRONMENT, OR WHY HARDIN WAS WRONG

My third "modest suggestion" for the future of environmental law and policy is increased reliance on information generation and dissemination and "voluntary" programs for pollution prevention and reduction.⁴⁷ Here the issue is largely theoretical. As illustrated by the remarkable success of the National Environmental Policy Act,⁴⁸ the Toxic Release Inventory⁴⁹

⁴⁶ See generally Henry P. Monaghan, *Marbury and the Administrative State*, COLUM. L. REV. 1 (1983) (questioning the propriety of judicial deference to agency interpretation of law).

⁴⁷ Elliott, *supra* note 3.

⁴⁸ Pub. L. No. 91-190, 83 Stat. 852, 42 U.S.C. § 4321.

⁴⁹ 42 U.S.C. § 11,023.

and the EPA's 33/50 programs,⁵⁰ and the rapid expansion of International Standards Organization (ISO) certification systems,⁵¹ so-called "voluntary" systems that rely on information generation and dissemination work well in practice. Now the challenge is to see whether they can be made to work in theory.

This is not a trivial problem. Like all humans, we see the world around us through the lens of our culture. Ironically, the prevailing legal culture of environmentalism is largely drawn from economics. It teaches us that human beings (and particularly, their institutions such as corporations) are selfish and ignorant and therefore incapable of acting for the common good except under the compulsion provided by law. Emblematic of this cynical view of human nature as *homo oeconomicus* is Garrett Hardin's *Tragedy of the Commons*,⁵² which has become the fundamental "creation myth" for modern American environmentalism. So strong is the hold on our minds of this cultural picture of human nature as selfish and shortsighted that we are generally incapable of perceiving contrary data showing that information dissemination and voluntary systems do in fact work in some circumstances to contribute significantly to protecting the environment.

Why do people recycle? According to the selfish theory of human motivations assumed by Hardin,⁵³ they should not bother to waste their time and effort in doing something that benefits them very little. One of the great embarrassments to legal theory in the environmental area is that we cannot explain why people do sometimes act to protect the environment when it is not in their apparent self-interest to do so. The models of human nature that underlie environmental regulation generally presume that people are unenlightened and selfish about the choices they make that affect the environment and therefore that "solutions" to environmental problems must either involve threats of punishment (such as standard-setting backed by criminal and civil penalties) or appeals to selfishness (economic incentives such as tradeable rights or subsidies).⁵⁴

In actuality, however, a very substantial portion of what both people and corporations do to take actions to protect the environment is *not* prompted by signals emanating from government that appeal to the selfish side of our nature. School kids recycle. Individuals donate to the Nature

⁵⁰ 56 Fed. Reg. 7,849.

⁵¹ ISO 14,001: Environmental Management Systems, International Standards Organization (ISO), ISO 14,001: 1996(E) (Sept. 1, 1996). *See also* International Organization for Standardization, available at <http://www.iso.ch/> (last visited Oct. 30, 2000).

⁵² Hardin, *supra* note 14.

⁵³ *Id.* at 1244.

⁵⁴ *See id.* at 1246.

Conservancy, and to environmental advocacy groups. Companies install control systems for unregulated pollutants. "Voluntary" systems such as EPA's 33/50 program achieve huge reductions in pollution.⁵⁵ Analysis of proposed projects under NEPA often results in re-design to minimize environmental effects.⁵⁶

None of these behaviors are supposed to happen under the prevailing models of human behavior that underlie our concept of environmental protection, and so we deny their existence. This is the way that all cultures deal with "facts" for which they do not yet have an adequate theoretical explanation. Even those who advocate information as a control technique invoke a mysterious outside force—"community pressure"—to explain why companies reduce their emissions in response to publication of data. For example, economist Paul Portney writes: "experience has shown that when firms are required to make public their emissions, they *feel pressure* to reduce those emissions even when they are perfectly legal."⁵⁷

No matter how loudly people insist that only coercive measures work to produce real benefits for the environment, it is just not true. To be sure, the opposite is also not the case. Human beings are neither wholly good nor wholly evil, neither wholly selfish nor wholly altruistic, but a complex mixture of the two. I do not contend that "voluntary" programs or education or appeals to our "better side" are the only devices that should be used in protecting the environment. There is a role for criminal enforcement, and for markets and economic incentives. But there is also an important role for softer devices, devices that appeal to a side of human nature that has generally been overlooked in the theoretical account of the nature of environmental problems that had been nearly universal in America during the last few decades. Thus, we are systemically over valuing and over relying on "hard" devices and policy instruments and under valuing and under-using "softer" ones, because we are building on a distorted picture of human nature. To get the mix of policies right for the future, we have got to go back to the beginning and correct an error that lies deep in the heart of the modern "creation myth" for the current culture of environmentalism: Garrett Hardin's *Tragedy of the Commons*.⁵⁸

In 1968, at the dawning of the modern environmental movement, Garrett Hardin published his extraordinarily influential article in *Science* called *The Tragedy of the Commons*.⁵⁹ Where property is held as a

⁵⁵ See Pollution Prevention Strategy, 56 Fed. Reg. 7849.

⁵⁶ National Environmental Policy Act, Pub. L. No. 91-190, 83 Stat. 852 (1970).

⁵⁷ Portney, *supra* note 1, at 7 (emphasis added). See also Elliott, *supra* note 3, at 1851 for a similar statement.

⁵⁸ Hardin, *supra* note 14.

⁵⁹ *Id.* The next few paragraphs describing and criticizing Hardin's argument are drawn from Elliott, *Contributions*, *supra* note 13.

common resource free to be exploited by all comers, Hardin argued, individual herders will each have a selfish incentive to add more and more cows to graze on the commons until its carrying capacity is eventually exceeded, bringing disaster to the community as a whole.⁶⁰ The underlying economic logic, according to Hardin, is that in adding an additional cow to the commons, the individual herder appropriates all of the benefits of the increase but is able to externalize or share the costs with the community as a whole.⁶¹ The same logic underlies environmental pollution, with the polluter appropriating the benefits of increased production, but externalizing most of the pollution costs onto others. Thus, *homo oeconomicus* provides a simple but elegant explanation for environmental pollution, as well as other "market failures" that cry out for government regulation.

The essence of "Hardin's paradox" is that adding the final "cow that breaks the camel's back" is seen by Hardin as individually rational but collectively irrational.⁶² Potential solutions to the problem of the conflict between individual incentives and collective welfare, according to Hardin, include governmental action to regulate the number of cows that can be brought onto the commons, or subdividing common property right into individual plots, so that individual landowners will have proper incentives to manage property more rationally to the benefit the community as a whole.⁶³

Hardin's parable has been extraordinarily influential. Even though Hardin had clearly identified private property as a possible solution, "the tragedy of the commons" was seen by most as making the case for increased government regulation to protect the environment. Like the cattle herders in Hardin's article who were courting collective disaster by selfish over exploitation of common resources, we in 20th century America were courting environmental disaster if we did not institute expanded government regulation to protect the environment. Hardin's "tragedy of the commons" became the standard paradigm for justifying government regulation to protect the environment. In 1983, when Professor William Rogers and I conducted a workshop on teaching environmental law at the annual convention of the American Association of Law Schools, every single law professor teaching environmental law at the time reported that he or she taught Hardin's "tragedy of the commons." Hardin's article was even specifically mentioned in Congress as part of the legislative history of the Clean Air Act Amendments of 1970.

60 Hardin, *supra* note 14, at 1244.

61 *See id.*

62 *See id.*

63 *See id.*

The influence of Hardin's paradigm was not limited to environmental law, however. Soon a variety of legal problems in areas as far afield as bankruptcy and oil and gas law were re-conceptualized as "tragedies of the commons." A variety of different terms grew up to describe the essential paradox identified by Hardin in the conflict between selfish individual incentives and the interests of the community as a whole: common pool problems, public good problems, the logic of collective action, free rider problems, externalities, Prisoner's Dilemmas, and micro motives versus macro motives. All of these models of human behavior turn on the essential paradox identified by Hardin: that the pursuit of individual self-interest can lead to collective disaster.⁶⁴

There was only one problem with this simple yet elegant model of human behavior as *homo oeconomicus*: Hardin was wrong. In fact, most of the time people do not actually behave in the way that Hardin imagined; they do not typically pursue narrow self-interest, lemming-like, into collective disaster. Because Hardin's parable rang true to the temper of the times (and possibly also because he published in a respected, scientific publication), no one paid much attention to his methodology. Hardin cited little if any empirical evidence that herders in traditional societies actually behave in the ways asserted in his article. On the contrary, like makers of parables since Jesus Christ, Hardin merely told a story and left it to the audience to decide whether it rang true to their experience. Hardin's method was, in short, more mythic than empiric.

When other scholars looked at how traditional societies actually manage common property resources, however, they found a quite different picture than that painted by Hardin. The seminal article is *The Comedy of the Commons*, by my colleague at Yale Law School, Professor Carol Rose.⁶⁵ Rose pointed out that many traditional societies hold resources in common, but that they only rarely "crash" into environmental disaster. Rather, before the crucial "tipping point" of environmental degradation is reached, either cultural norms, religious or other factors are often brought into play to dissuade the individual from adding the "cow that breaks the camel's back" onto the commons. In contrast to the exclusively legal solutions envisioned by Hardin, Rose pointed out that cultural and other factors often allow groups to manage common resources in ways that are sustainable.

In actuality, neither Hardin's "tragedy" of the commons, in which selfishness leads to disaster, nor Rose's "comedy" of the commons, in which communities successfully regulate their relations with the environment to ensure their long-term survival, is entirely adequate to

⁶⁴ Hardin, *supra* note 14.

⁶⁵ Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 U. CHI. L. REV. 711 (1986).

explain the full range of human behavior. Human history contains examples of both environmental successes and failures. There are numerous examples in human history where valuable animals have been made extinct, fisheries have been overfished, or dustbowls and deserts created by over exploitation.⁶⁶ Both Rose's "comedy" and Hardin's "tragedy" are successful models for some portion of the range of human behavior, but neither fully accounts for all the data, nor explains why sometimes human beings successfully regulate their relations with the environment and sometimes fail to do so.

The problem of the tragi-comedy of the commons is analogous, perhaps even identical, to the problem in biology of why a parasite kills the host.⁶⁷ Human beings are a kind of "parasite" on Mother Earth, and like other parasites, they would be better off if they could manage to regulate themselves so they do not over multiply, killing the host and also themselves. In fact, as parasites multiply and become more widespread, they tend to become less virulent, because the advantages to them of rapid multiplication decrease. But most microbiological parasites do not have sufficient foresight to regulate their own reproduction to the point that they avoid killing the host. As UCLA physiologist and environmentalist Jared Diamond points out, killing the host is not a goal of reproduction by parasites, but an unintended consequence of their inability to regulate their evolutionary "success."⁶⁸

Human beings, on the other hand, are unlike the AIDS virus or other microbiological parasites in that our evolutionary strategy includes foresight and culture as strategies for succeeding in the evolutionary battle for survival. Margaret Donaldson, Professor Emeritus of Developmental Psychology at the University of Edinburgh and a leading theoretician of how the human brain works, describes this distinctive characteristic of human brains as follows: "The devising of novel purposes comes readily to us because we have brains that are good at thinking of possible future states—at considering not merely what is but what might be."⁶⁹

The element of "foresight" in human brains—their ability to imagine counterfactual and future states of the world—is a crucial element that makes it possible that *sometimes* we manage environmental problems successfully.

⁶⁶ See, e.g., JARED DIAMOND, GUNS, GERMS AND STEEL: THE FATE OF HUMAN SOCIETIES (1997).

⁶⁷ Elliott, *Law and Biology*, *supra* note 13, at 603–04. For an elaboration, see E. Donald Elliott, *The Tragi-Comedy of the Commons: Evolutionary Biology, Economics and Environmental Law*, 20 VA. ENVTL. L.J. (2001) (forthcoming).

⁶⁸ Diamond, *supra* note 66, at 265–92.

⁶⁹ MARGARET DONALDSON, HUMAN MINDS: AN EXPLORATION 9 (1st Am. ed. 1993).

Foresight is one of the crucial elements of human nature that Hardin leaves out of his account. The other is "altruism," the phenomenon that humans (and other animals) will sometimes sacrifice what appears to be in their own best interests to promote the survival of others, particularly close kin.⁷⁰

When foresight and altruism are added to Hardin's parable, it is possible to imagine that a great prophet arises who foresees the disaster that faces the community if it continues to over graze the commons, and perhaps even that the prophet's words are heeded, and that some form of effective governance (a wise king, or a priest or even a community meeting) does act successfully to regulate the cattle herding on the commons. Successful "regulation" can include a variety of cultural and religious norms, such as having more than five cows is no longer a desirable sign of wealth. Sometimes such cultural norms are developed and the community is saved, and sometimes they are not.⁷¹ But by predicting that the herders will always be selfish and stupid, Hardin oversimplifies the problem.

Programs that require mandatory assessment and dissemination of information about anticipated effects on the environment can be understood as attempts to mandate the social foresight that is a necessary (but alas, not a sufficient condition) for solving the Problem of the Commons. By requiring that the government must prepare an "environmental impact statement" before it builds a new project, or by requiring a company to compute and publicize the tons of hazardous chemicals that it releases, society is requiring its "rulers" not to become

⁷⁰ Elliott, *Law and Biology*, *supra* note 13, at 608.

⁷¹ In his recent *tour de force* of human history from an evolutionary perspective, *Guns, Germs, and Steel* (which won both the Pulitzer prize and the National Science Medal) and in his previous book, *The Third Chimpanzee*, Jared Diamond provides an analysis of numerous societies, some of which solved and some of which failed to solve "The Problem of the Commons." Diamond identifies the following factors that contribute to whether a society fails to solve the Problem of the Commons:

"[S]mall, long-established, egalitarian societies tend to evolve conservationist practices, because they've had plenty of time to get to know their local environment and to perceive their own self-interest. Instead, damage is likely to occur when people suddenly colonize an unfamiliar environment ... or when people acquire a new technology whose destructive power they haven't had time to appreciate. . . . Damage is also likely in centralized states that concentrate wealth in the hands of rulers, who are out of touch with the environment."

DIAMOND, *THE THIRD CHIMPANZEE*, *supra* note 18, at 335-36 (emphasis added).

"out of touch with the environment."⁷² Legal devices that require the production of environmental information such as NEPA⁷³ or TRI⁷⁴ can be understood as attempts to mandate foresight into the social consequences of individual actions. Imagine that before one of Hardin's herders placed an incremental cow on the commons, he or she had to stand before the community and announce a public assessment of the likely consequences of her actions. Such mandated foresight might not always prove successful to prevent problems of overgrazing, but in some instances it might change behavior.

Because we have learned Hardin's lessons too well, we tend to overlook and undervalue the contributions that can be made by mandating foresight into the consequences of individual's action on the environment. As a result of assuming a simple economic model of the drivers of human actions, we have probably over-invested in hard regulatory techniques such as command-and-control standard-setting backed by criminal penalties, which are designed to give people selfish reasons to act as if we were unselfish. Information production is not a panacea, and it certainly cannot replace other techniques entirely, but there are situations in which mandated foresight can be successful, and in the United States at the millennium, we are probably under invested in these soft regulatory techniques.⁷⁵

⁷² For a compatible vision of the broader potential of programs mandating information disclosure, see William F. Pedersen, *Regulation and Information Disclosure—Parallel Universes and Beyond*, HARV. ENVTL. L. REV. (forthcoming March 2001).

⁷³ Pub. L. No. 91-190, 83 Stat. 852.

⁷⁴ 42 U.S.C. § 11,023.

⁷⁵ See *id.*